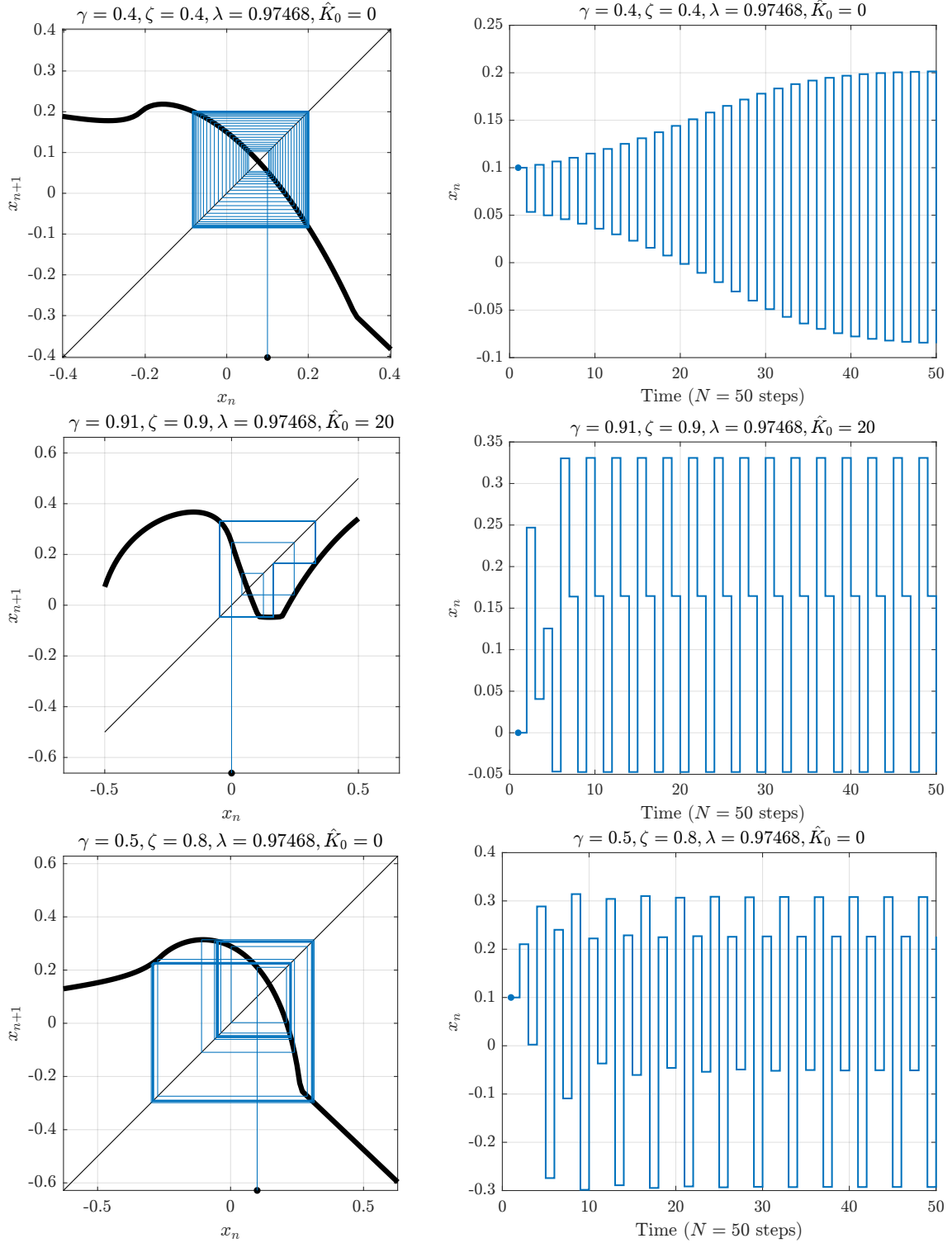


Supplementary material for the article:
*Oscillation threshold of a Raman clarinet with localized
nonlinear losses at the open end*

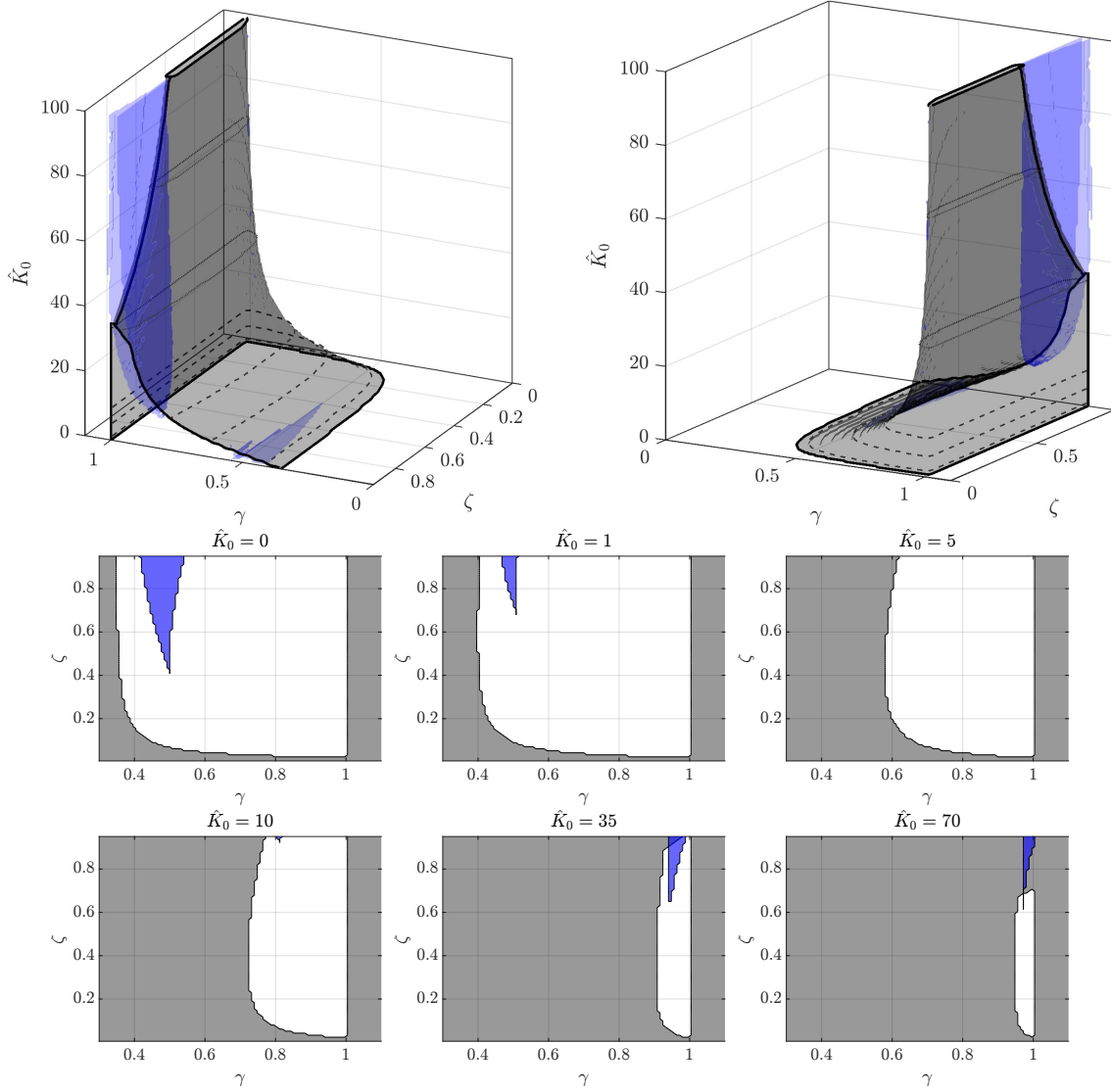
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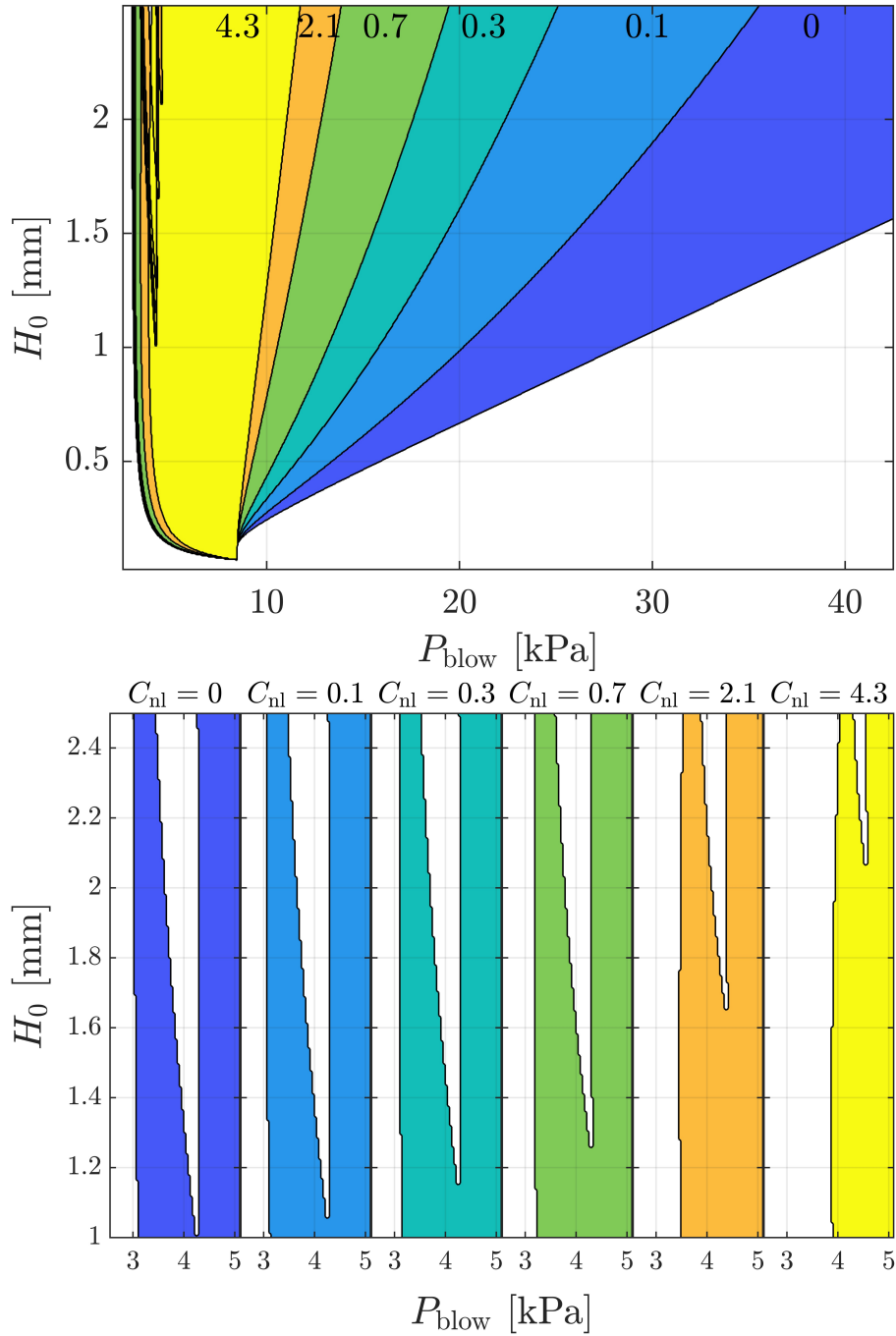
Suppl. Fig. 1: Overview of the variety of observed regimes. Rows 1, 2 and 3 respectively refer to the regimes R_2 (two states), R_3 (three states) and R_4 (four states i.e. period-doubling of R_2). The left column shows the construction of the iterations on f (thick black line) using the line $y = x$ (thin black line). The black dot on the x-axis denotes the initial condition x_0 . The right column shows the time signal obtained from the iterations on f . The control parameters are specified at the top of each graph.



Suppl. Fig. 2: Limit of stability of R_1 (in black) and R_n ($n > 2$, in blue) in the $(\gamma, \zeta, \hat{K}_0)$ space, for $\lambda = \sqrt{0.95}$. On the 3D Figures, The non-oscillating state is stable outside the volume delimited by the black surface, and unstable inside. The three dashed-line curves are horizontal cuts at $\hat{K}_0 = \{1, 5, 10\}$, also shown on the second and third rows. The two dotted-line curves are horizontal cuts at $\hat{K}_0 = \{35, 70\}$, also shown on the third row. The long-period regimes are unstable outside the volume delimited by the blue surface.

Suppl. Table 1: Geometric parameters used in the simulations. P_M is the minimal reed closing pressure, R is the inner radius such that $S = \pi R^2$, w is the width of the reed channel (Dalmont & Frappé, 2007, JASA). It is recalled that $\zeta = wH_0Z_c\sqrt{2/(\rho_0P_M)}$ and $\gamma = P_{\text{blow}}/P_M$.

| P_M [kPa] | R [mm] | w [mm] |
|-------------|----------|----------|
| 8.5 | 7.5 | 12 |



Suppl. Fig. 3: Stability region of R_2 in the (P_{blow}, H_0) (blowing pressure, reed height at rest) plane, for different values of $C_{\text{nl}} \in [0, 4.3]$ and $\lambda = \sqrt{0.95}$. Conversion to dimensionless variables can be done using Suppl. Table 1. Top panel: values of C_{nl} corresponding to the different colors are written on the Figure. The color patches are superimposed in a fan shape from blue ($C_{\text{nl}} = 0$) to yellow ($C_{\text{nl}} = 4.3$). Bottom panel: detail view on the region where the two-state regime is unstable.